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REMARKS

Claims 1 and 5 has been amended. Claims 2 - 4 has been canceled without prejudice. Claim 17 has been added. No new matter has been added by the amendments or the newly added claim. Support for the newly added claim can be found throughout the specification, claims and drawings as originally filed. The foregoing amendments to the Specification are made to insert the required SEQ ID NO identifiers associated with each listed sequence.

Applicants now turn to comments made by the Examiner in the Office Action as follows.

1. The Examiner states, "The information disclosure statement filed 8/18/2005 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because the following references are missing date information as listed in the filed IDS: CB and CD. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).".

Applicants will file another Information Disclosure Statement under separate cover to comply with missing elements of the previously filed Information Disclosure Statement.

2. This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR § 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR §§ 1.821 through 1.825 for the reason(s) below:

> The instant disclosure recites lists of sequences in the specification (e.g. see p. 21, 36, etc.), which sequences are not identified by their corresponding SEQ ID Nos. The instant disclosure also recites lists of sequences in the drawings, which sequences are not identified by their corresponding SEQ ID Nos in the "BRIEF DESCRIPTION OF THE FIGURES AND TABLES" of the instant specification.
>
> Applicants are requested to amend the instant specification and/or claims accordingly.

The foregoing amendments to the Specification were made by the Applicants to insert the required SEQ ID NO identifiers associated with each listed sequence. As such, the objection should be obviated.

3. Claim 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

> The Examiner states, "Claim 1 recites "... sugar chains serving as an indicator", which is unclear. It is not clear which entity (or entities) is the "indicator(s)".
>
> Claim 2 recites the term "O-binding sugar chains", which is indefinite. Neither the instant specification nor the claims specifically define this uncommon term, which is not recognized in the art to have a specifically defined structure and/or meaning.".

Applicants respectfully disagree. The amended claim 1 defines the recombinant MAH lectin molecules in terms of the exact amino acid sequences in the sugar chain binding region thereof, rather than defining them in terms of the affinity to the "indicator(s)". With regard to "O-binding sugar chains" (O-linked carbohydrate chains), the objected claim 2 reciting this feature has been cancelled. Accordingly, Applicants believe this rejection has been overcome by the amendments.

4. Claims 1-3 are rejected under **35 U.S.C. 102(b)** as being anticipated by Yim et al (PNAS. Vol. 98 (5): 2222-2225; 2/27/2001; cited in IDS).

> The Examiner states, "The instant claims recite a lectin library for *discriminating glycoproteins or cells, diagnosing serum or cells or fractionating glycoproteins or cells,* which comprises at least one kind of lectin selected from plural kinds of lectins, on the basis of affinity for cells, pseudo-cells, glycoproteins or sugar chains serving as an indicator.
>
> The recitation in *"italic"* of the instant claim (Claim 1) is construed as intended use for the claimed "lectin library". The portion of the claim (Claim 1) that is underlined is construed as product by process limitation.
>
> Yim et al, throughout the publication, teach lectin libraries generated from Maachia amurensis hemagglutinin (MAH) lectin (Abstract), which reads on the elected species of MAH. The reference teaches various MAH mutants (a lectin library) that recognize various carbohydrate chains on erythrocyte (reads on the elected species of "erythrocyte") (p. 2222, top of right col.; p. 2224, right-left col.; Figure 3), which reads on the lectin library of **clms 1 and 3.** The reference's teaching also reads on the process of making the lectin library (selection based on affinity for erythrocytes) of **clms 1 and 3.**
>
> The instant specification does not specifically define the term "O-binding sugar", which may be interpreted to mean "O-glycosylation" or "O-linked carbohydrate chains" (see spec. p. 13, para 2). The reference teaches MAH binds to sialic acid residues (sugar chain) on erythrocytes, which the sialic acid residues are linked to the erythrocytes through O-glycosylation, as evidenced by the instant specification (Figure 4, p. 4, para 2; especially p. 11, para 3; p. 14, para 2). Furthermore, MAH lectin is known in the art to "preferentially binds to O-linked carbohydrate chains containing sialic acid" (Imberty et al., Journal of Biological Chemistry. Vol. 275(23): 17541-17548, 2000; cited in IDS). Thus, it is an inherent property of the MAH lectin to bind "O-linked" carbohydrate chains. Therefore, the MAH wild-type and mutants (a library of lectins) that were selected by binding to erythrocytes (containing the 0-linked carbohydrate chains) read on the lectin that "recognize" "O-binding sugar chains" of **clm 2.".**

Applicants respectfully disagree. Applicants submit that *Yim et al* (PNAS. Vol. 98 (5): 2222-2225) does not anticipate any of the recombinant MAH lectin molecules as presently claimed. Further, the cited reference does not disclose that the recombinant MAH lectin molecule having a sugar chain binding region comprising the amino acid sequence set forth in SEQ ID No: 30 (new claim 6) has a strong affinity to KUM5 cells while exhibiting little affinity

for other mesenchymal stem cell subgroups, namely KUSA-A1 and 9-15C cells, which may provide a clear discrimination as well as fractionation of these cells.

Specifically, *Yim et al* describes 16 mutant MAH clones and the amino acid sequences of the carbohydrate-recognition domains thereof in Figure 3. However, it is very clear from the figure that the 16 mutant clones of *Yim et al* do not include any of the recombinant MAH lectin molecules of the present invention because, e.g. the third amino acid of the carbohydrate-recognition domains is not "Tyr" throughout the 16 mutants (except for wild-type MAH) of the reference whereas the corresponding amino acid is always "Tyr" in SEQ ID Nos. 22 to 31 of the instant application. Moreover, *Yim et al* only demonstrates that the lectin library (panel) consisting of the 16 mutant MAH clones can be used to distinguish the erythrocytes from different species (page 2225, left column, second paragraph; Fig. 4).

Accordingly, Applicants believe that the lectin library comprising a recombinant MAH lectin molecule as presently claimed is novel over *Yim et al*. Applicants respectfully request reconsideration.

> 5. The Examiner states, "Claims 1-3 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 13 and 15 of copending Application No. 10/468543 (US 20040091938; filed 12/29/03). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the'543 application reads on the claims of the instant claims.
>
> The `543 application claims:
>
> Claim 13: "A lectin library for determining differences in sugar chains, comprising a plurality of different lectin molecules, wherein: (a) each lectin molecule has a sugar chain-binding region comprising at least 11 amino acid residues and including one or more conserved amino acids therein; (b) the lectin library comprises at least one recombinant lectin molecule that is derived from Maackia amurensis hemagglutinin (MAH) and which has a sugar chain-binding region with at least one amino acid substitution, insertion, or deletion; and (c) the lectin library comprises at least one lectin molecule that is capable of binding a sugar chain.
>
> Claim 15: The lectin library of claim 13, wherein the different lectin molecules are selected from a collection of lectin molecules by contacting the collection of lectin molecules with one or more sugar chains."

> These claims read on the "lectin library" and lectin that binds to "O-binding sugar chain" as recited in the instant claim, because MAH preferentially binds to O-linked carbohydrate (sugar) chains (as evidenced by Imberty et al).
>
> This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.".

Applicants respectfully disagree. Applicants believe that this rejection has also been overcome by the amendments as above. In fact, co-pending Application No. 10/468543 does not disclose SEQ ID Nos. 22 to 31 of the instant application. Specifically, in Table 2 of the co-pending application (Publication No.: US2004/0091938 A1), the amino acid sequences of the sugar chain binding region of 35 mutant MAH clones are described. However, for example, the forth amino acid of the sugar binding region is not "Phe" throughout the 35 mutant clones of the co-pending application whereas the amino acid is conserved as "Phe" among SEQ ID Nos. 22 to 31 of the instant invention. Accordingly, Applicants believe that the claims as amended do not create a double patenting issue.

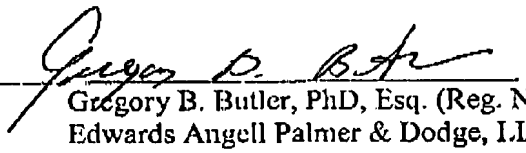
Applicants request the entry of the changes to the claims requested above. No new matter has been added by the amendments to the claims. Applicants submit that the present application and claims, as amended, is in condition for allowance, and, accordingly, early consideration and allowance of the application is respectfully requested.

If for any reason an additional fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge Deposit Account No. **04-1105**. If the undersigned can be of any assistance in advancing the prosecution of this case, the Examiner is invited to contact him through the information given below.

Respectfully submitted,

EDWARDS, ANGELL, PALMER & DODGE, LLP

Date: August 9, 2007

By: 

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